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ABSTRACT

To assess the character and level of financial support for current research about higher education, a survey was conducted of 150 organizations, including all programs of higher education and research centers that are affiliated with colleges and universities, all regional educational laboratories and national research centers, and a number of other research organizations. Of this population, 72 returned the questionnaire; these organizations reported total expenditures of $8 million. Higher education programs and centers at universities constituted two-thirds of those not responding; a review of these organizations indicated that probably half neither received nor allocated research funds in 1982, and the other half probably received a total of less than $1 million. Data are presented showing that federal grant and contract funds account for about 60% of all reported expenditures, with about 21% coming from private corporations and foundations, and reporting organizations contributing about 16%. Tables are presented showing a breakdown of type of research--disciplinary (fundamental and developmental) and policy (policy, evaluation, and descriptive)--by source of funds. The estimated total research and development (R&D) effort on higher education in 1982, $10 million, is discussed in the context of the diversity of topics, the R&D effort on all facets of education, and the R&D effort of business and industry. The role of the various funding sources and the need for research priorities are also discussed. (KM)

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Expenditures for Research on Higher Education

Jack Y. Krakower

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Expenditures for Research on Higher Education

We are all too familiar with how the world of higher education has changed during the past 10 years. The computer age is here. Structural changes in the economic system have permanently wiped out tens of thousands of jobs. By 1990, there will be 25 percent fewer 18-year-olds in this country than there were in 1980. Federal and state support for higher education is, at best, in a holding pattern.

What does all this mean? At a minimum, management skills and informed decisionmaking will be more crucial than ever before in higher education. It has become painfully clear to administrators at many institutions that managing in less hospitable times requires very different skills and information than when students were banging on the door and federal student aid was considered a basic right. At the same time, the ever-increasing demands for college-level adult and continuing education programs will require new curriculums, teaching procedures, and methods for evaluating both the effectiveness and efficiency.

Where does this leave R&D on higher education? It is hard to imagine the R&D effort making significant contributions to the tasks ahead without significant increases in support for these activities. The National Center for Higher Education Management Systems (NCHEMS) carried out a study motivated by the lack of information regarding the character and level of financial support for current research about higher education.

This report presents the findings of this study.

Background

A few statistical snapshots portray the breadth and complexity of higher education and the numerous factors with which research on the subject must contend.

Publications such as the Condition of Education, the Digest of Education Statistics, and NSF's National Patterns of Science and Technology are the sources of the following data.

In 1982, there were approximately 3,250 colleges and universities in the United States. New York had the most, 294, and Nevada the least, 7. These schools served a total headcount population of approximately 12 million students; 5 million of these, or about 40 percent, were enrolled part-time. Between October 1974 and October 1979, the number of students 25 and older increased 60 percent.

Approximately 1 percent (33 schools) had total headcount enrollments exceeding 30,000; more than 300 schools had enrollments of fewer than 200 students. The U.S. Department of Education predicts that by 1990 9 percent fewer students will be enrolled in full-time programs than in 1982. This 9 percent equals about 670,000 students,

or about 200 students per institution. To the extent that this prediction holds true, the shortfall will not be equally divided among all schools.

The oldest school participating in the Higher Education General Information Survey (HEGIS) is Harvard, established in 1636. More than 650 schools were added to the HEGIS data base between 1972 and 1981. (One is the New England Institute of Arts and Sciences, originally established in 1907 as the New England Institute of Embalming.)

In 1982, American colleges and universities employed about 515,000 full-time faculty and 373,000 part-time faculty. Full-time instructional faculty lost an average of 2.2 percent of their earnings to inflation in each year between 1972 and 1982.

Total Current Fund Expenditures and Mandatory Transfers (total expenditures) by all colleges and universities in 1982 is estimated at $68 billion. This figure does not include other indirect costs of higher education, such as foregone earnings, implicit rent, tax expenditures, and depreciation. These are estimated at between $100 and $130 billion for the year. Combining the estimates for the direct and indirect costs of higher education yields a total between $170 and $200 billion--an amount equal to about 6 percent of the GNP in 1982.

In 1982, approximately 80 percent of total current fund revenues for all public colleges came from federal and state government sources. The figure was 25 percent in the private sector.

In FY82, colleges and universities reported expenditures for research and development (R&D) in science and engineering totaling $7 billion. More than 80 percent of this research was carried out by 100 institutions. The federal government paid for more than two-thirds of all the research related to science and engineering performed in colleges and universities. Industry sponsored about 4 percent. This means that industry would have to more than double its present contribution to make up for a 10 percent cut in federal funds.

The NCHEMS Study

Survey questionnaires were sent to 150 organizations. Included were all programs of higher education and research centers that are affiliated with colleges and universities, all regional educational laboratories and national research centers, all members of the Association Council for Policy Analysis and Research (ACPAR), and 20 major research organizations listed in the Directory of Research Organizations in Higher Education, including, for example, the Institute for Social Research (ISR) in Michigan and the Higher Education Research Institute (HERI) at UCLA. Organizations excluded from the study include: statewide agencies for higher education, university institutional-research offices, associations such as the Association for Institutional Research and the Association for the Study of Higher Education, foundations (Carnegie, Ford), federal agencies (National Science Foundation, Office of Economic Opportunity), special federal commissions, such as the 1970 Presidential Task Force

on Higher Education, and research organizations not cited in the Directory of Research Organizations in Higher Education. (The Research Centers Directory indicates that as many as 350 organizations may carry out research related to higher education.)

University institutional-research offices and statewide agencies were excluded because they generally do not perform studies that are intended to serve national needs. Federal agencies, associations, and foundations seldom perform their own research. Research organizations not cited in the Directory of Research Organizations in Higher Education were excluded in order to carry out a quick, inexpensive study and because these organizations were not likely to have received significant funds to carry out research on higher education.

The organizations that were surveyed were asked to state total expenditures for separately budgeted research on topics pertaining to higher education. For the purposes of this study, research was defined to include (1) developmental research concerned with inventing new solutions or improving existing solutions for problems in higher education, (2) fundamental research concerned with establishing new facts or principles, (3) evaluation research concerned with assessing the effects of existing programs or determining the effects of new programs, (4) descriptive research concerned with describing some important facet of higher education, and (5) policy research concerned with determining the feasibility and advisability of new programs, strategies, or policies.

Accuracy and Reliability

The data collected and reported in this study are approximations. However, even if reported totals are off by several hundred percent, they still indicate that the R&D on American higher education (1) comprises an extremely small percentage of total expenditures for the enterprise, and (2) is extremely small compared to the R&D effort in other sectors of education and the economy.

Results

Of the 150 organizations surveyed, 72 returned the questionnaire. These organizations reported total expenditures of $8 million.

Higher-education programs and centers at universities constituted two-thirds of those not responding. A review of these centers by NCHEMS staff suggested that probably half neither received nor allocated research funds in 1982. The other half probably received a total of less than $1 million. Other nonresponding organizations were generally not considered by NCHEMS staff to carry out R&D on higher education. It is extremely unlikely that this group received more than $1 million total. Nonetheless, $1 million estimates for each of these groups were added to the $8 million reported by responding organizations. The resulting $10 million estimate of total R&D expenditure on higher education in 1982 is a generous but not too inflated figure.

The questionnaire also requested information about the types of research being conducted and sources of funding. Table 1 shows that federal grant and contract funds account for about 60 percent of all reported expenditures. About 21 percent of reported funds came from private corporations and foundations. Reporting organizations contributed about 16 percent. Revenues from sales and services, parent organizations, and other sources constitute about 3 percent.

Table 1

Source of Funds for all Research on Higher Education*

Source of Funds	Percent of Total
Organization's own funds	16%
Parent organization	< 1%
Private corporation/foundation	21%
Federal grant/contract	60%
Revenue from sales/service	< 1%
Other	2%

* All percentages are approximations based on reported expenditures (≈ $8,000,000).

Table 2 distributes the funding between disciplinary research and policy research. The disciplinary-research category includes expenditures for both developmental and fundamental research. James Coleman, in Policy Research in Social Sciences (1972), describes disciplinary research as research primarily intended for the accumulation of knowledge and theory about phenomena that further the development of a discipline. The policy-research category describes research intended to provide guidance for action and policy development. This category was developed by combining policy, evaluation, and descriptive research.

Table 2

Type of Research by Source of Funds*

Disciplinary Research (Fundamental + Developmental)

Source of Funds	Percent of Category	Percent of Total
Organization's own funds	5%	2%
Parent organization	< 1%	< 1%
Private corporation/foundation	16%	10%
Federal grant/contract	77%	47%
Revenue from sales/service	0%	0%
Other	2%	< 1%
Category Subtotal	≈ 100%	≈ 60%

Policy Research (Policy + Evaluation + Descriptive)

Source of Funds	Percent of Category	Percent of Total
Organization's own funds	36%	14%
Parent organization	1%	< 1%
Private corporation/foundation	29%	11%
Federal grant/contract	30%	13%
Revenue from sales/service	< 1%	< 1%
Other	4%	1%
Category Subtotal	≈ 100%	≈ 40%

* All percentages are approximations based on reported expenditures (≈ $8,000,000).

The first column, "percent of category," shows the source of funds for all research conducted in the category. Thus federal grant and contract funds accounted for about 77 percent of all funds supporting disciplinary research. The second column, "percent of total," shows each source of funds as a percent of total funds. For example, the federal government sponsored 47 percent of all disciplinary R&D that was performed in 1982. The category subtotal in this column indicates that about 60 percent of all higher-education R&D performed in 1982 was related to a discipline.

Observations

The estimate of the total R&D effort on higher education in 1982--$10 million--may seem to be a large amount. It needs to be placed in context to be properly understood, however. First, the $10 million includes research on a range of topics, including the assessment of institutional and program effectiveness, adult learning

processes, financial aid, university-industry relationships, vocational education, and institutional management. Second, the direct costs of higher education in 1982 are estimated at $68 billion. So R&D amounted to less than .015 percent of total expenditures by colleges and universities.

To broaden the context, the R&D effort on all facets of education can be considered. Unfortunately, estimates of this effort are rarely made. One of the most recent studies was performed by the Bureau of Social Science Research in 1977. The results of this study suggest that educational R&D expenditures in the United States in 1977 exceeded $734 million. This estimate includes expenditures by state educational agencies, intermediate service agencies, local educational agencies, colleges and universities, and miscellaneous organizations. Assuming there has not been a significant change in either the funds for or types of research performed since 1977, then the NCHEMS data indicate that R&D intended to serve national higher-education needs constituted less than 1.5 percent of all educational R&D performed in 1982.

If, for the sake of argument, the estimate was off by a factor of 10, the resulting total of $100 million would still be less than 15 percent of the entire national educational R&D effort in 1982. Parenthetically, if the higher-education R&D effort were $100 million in 1982, it would have been almost twice the entire budget of the National Institute of Education (NIE) for all sectors of education in 1982. While no data exists concerning total educational R&D in 1982, changes in financial conditions between 1977 and 1982 suggest that the R&D effort would have been fortunate if it had maintained its 1977 levels. If we assume the R&D effort kept pace with inflation, application of either the Higher Education Price Index or the Consumer Price Index puts the 1982 estimate for total R&D over $1 billion. Needless to say, estimated expenditures for higher-education R&D constitute an even smaller percentage of this figure.

To broaden the context even more, consider the R&D effort of business and industry in 1982. It is estimated at 2.4 percent of total expenditures. The nature of R&D activities carried out by the private sector is generally quite different from those of higher education. The former are primarily concerned with the development of products and processes, the latter with understanding and improving how various facets of the system operate. The comparison is informative nonetheless.

If the estimates are reasonably accurate, the ratio of the R&D effort <u>in</u> business and industry to the R&D effort <u>on</u> higher education (that is, 2.4 percent to .015 percent) is greater than 150 to 1. If the estimate was off by as much as 1,000 percent, separately budgeted research on higher education would still constitute less than .1 percent of total expenditures for the enterprise. Furthermore, this outlay would be less than one-fifteenth the national average for business and industry.

Conclusion

Considering the percentages reported in table 1, it seems clear that the federal government plays, and will continue to play, the predominant role in supporting R&D on higher education, especially in the area of disciplinary research. The federal role is appropriate, since the outcomes of such research are intended to serve the entire higher-education community rather than an individual institution or state-level agency. Voluntary support for higher education in the form of corporate and foundation grants increased significantly in the last 10 years and reached an estimated $2 billion in 1982. But less than one-tenth of 1 percent of these funds were designated for R&D on higher education. Furthermore, even if corporations and foundations could be motivated to increase their R&D support by 50 percent--which seems unlikely--this additional contribution would amount to less than $1 million annually.

The limited availability of R&D funds suggests that research priorities must be established that specifically reflect the needs of higher education. Once these priorities are established, a concerted effort must be made to (1) determine exactly the type and nature of research currently being supported; (2) assess the adequacy of these efforts in terms of specified priorities; and (3) seek compensatory funding for research that is underfunded.

Reference

Coleman, J. S. Policy Research in the Social Sciences. Morristown, N.J.: General Learning, 1972.

Working Papers

The NCHEMS working papers are directed primarily to researchers in higher education. These papers cover a broad range of subjects and treat them at various depths. The authors present these studies as progress reports, designed not so much to give a comprehensive view of their subjects as to stimulate further research and commentary by the research community. The papers vary in length from 12 to 70 pages.

The papers are of three types: research in progress, background information on a specific topic, and bibliographic studies.

Formula Budgeting for Higher Education: State Practices in 1979-80 (1982)
By Francis M. Gross

The variety of formulas used by states in budgeting requests is analyzed and graphically presented according to functional areas.
2BA349 $6.00

The Utility of HEGIS Finance Data: A Researcher's Perspective (1982)
By Marilyn McCoy

This report examines factors affecting the utility of the HEGIS finance data, the process of collecting and using the data, roles and responsibilities of those involved in the process, and steps for improving the usefulness of the data.
2BA351 $4.00

State Reporting Practices and the Quality of HEGIS Finance Data (1982)
By Jane N. Ryland

Variations in reporting practices among states and the significance of these variations for the researcher are examined.
2BA352 $4.00

Impact of Health Programs on Instructional Expenditures in Higher Education (1982)
By John D. Smith

Through a specific example using regression analysis to compare instructional costs of health professional programs, this paper shows how HEGIS data can be used to compare institutions despite complications caused by program mix.
2BA353 $4.00

The Many Faces of Quality (1984)
By Ellen Earle Chaffee

This address, which was presented at the faculty and staff orientation day for the Community Colleges of Spokane, Washington, asks how quality can be improved at different levels in the institution. It emphasizes the importance of a shared sense of purpose and suggests a list of "do's and don'ts" which is based on both existing research and new studies of successful managers.
2BA372 $4.00

Research on Higher Education (1984)
By Jack Y. Krakower

This paper notes the three factors that significantly influence the success and utility of research about higher education, and it explores how one factor—weaknesses and faults in the research process—is well within the power of the researcher to control.
2BA373 $4.00

Expenditures for Research on Higher Education (1983)
By Jack Y. Krakower

This paper describes the character and level of financial support for research which is being carried out nationally today on topics pertaining to higher education.
2BA374 $4.00

Linking Planning with Budgeting: An Annotated Bibliography (1984)
By Richard Hurst

The purpose of this bibliography is to help researchers and practitioners in higher education to locate relevant literature concerning the problem of linking planning with budgeting in the administration of higher education. Citations from the separate literatures on planning and budgeting were selected according to how well they demonstrate the link between planning and budgeting.
2BA375 $4.00

Organizational Effectiveness: A Bibliography Through 1981 (1982)
By Kim S. Cameron with the assistance of Renee de Alba

This bibliography limits the concept "organizational effectiveness" so that the unit of analysis is the organization, not the individual. Notations included are drawn from the literature pertaining to organizational sciences, higher education, public administration, business policy, applied psychology and applied sociology. Special emphasis is given to the higher-education literature on organizational effectiveness.
2BA376 $6.00

Bibliography on Decline and Retrenchment (1984)
By Raymond F. Zammuto

The conditions facing many public and private organizations require that frameworks for management under conditions of adversity be fully developed. Drawing from various literatures, including the literatures about organizational science, higher education and public administration, this bibliography makes available the most relevant research on decline and retrenchment in higher education.
2BA377 $6.00

A Bibliography on Strategic Management (1985)
By Ellen Earle Chaffee

This bibliography of materials on strategic management was compiled using several criteria for inclusion. A work was included if it (1) provided introductory information on a variety of subtopics within strategic management; (2) showed signs of becoming a classic, in that it was frequently cited by other authors in the area; (3) dealt specifically with the adaptation of an organization to changes in its external environment; or (4) related strategic management concepts to institutions of higher education. Additionally, there was some effort made to include works about strategic management as it relates to decline and recovery from decline.
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